ABSTRACT

An antenna system, to enable communication with a moving vehicle via a satellite, utilizes an array of subarrays contiguously positioned in a diamond-type pattern. Straight edge boundaries of an array can maximize sidelobe degradation resulting from diffraction effects at the edge. The diamond-type array pattern provides saw tooth array edge boundaries with all edge portions at 45 degrees (or other suitable acute angle) to the principal array dimension (the length dimension). Uniform excitation may be provided for all subarrays via a binomial power divider/combiner configuration. Mechanical beam steering can be provided in azimuth and elevation. A phase shifter assembly may be provided to enable a limited electronic scan (e.g., plus or minus 2 degrees) to increase beam steering agility from a moving vehicle. Thin flat-plate subarray design details are provided.